

3. Segmentation is completed in about two hours, and gives rise to a gastrula, with ectoderm, endoderm, digestive cavity and blastopore, and a circle of cilia or velum. At this stage of development the embryos crowd to the surface of the water and form a dense layer less than $\frac{1}{4}$ inch thick.

4. The blastopore closes up; the endoderm separates entirely from the ectoderm; and the two valves of the shell are formed, separate from each other, at the edges of the furrow formed by the closure of the blastopore.

5. The digestive cavity enlarges and becomes ciliated; and the mouth pushes in as an invagination of the ectoderm at a point directly opposite that which the blastopore had occupied. The anus makes its appearance close to the mouth.

6. The embryos scatter to various depths, and swim by the action of the cilia of the velum. The shells grow down over the digestive tract and velum; and the embryo assumes a form so similar to various marine Lamellibranch embryos which are captured by the dip-net at the surface of the ocean that it is not possible to identify them as oysters without tracing them from the egg. The oldest ones which I succeeded in raising in aquaria were almost exactly like the embryos of *Cardium* figured by Lovén.

7. The ovaries of oysters less than $1\frac{1}{2}$ inch in length, and probably not more than one year old, were fertilized with semen from males of the same size, and developed normally.

An illustrated paper on the embryology of the oyster, with a detailed account of my observations, will be published, shortly, in the Report of the Maryland Fish Commission for 1879.—*Amer. Journ. Sci. and Arts*, December 1879, pp. 425-427.

Observations on the Salivary Glands of the Echidna.

By M. H. VIALLANES.

From the anatomical arrangement of the different glandular masses which produce the saliva we may distinguish in the Echidna the three groups of glands which are met with in most Mammalia, namely:—1, the *parotid glands*; 2, the *submaxillary glands*; 3, the *sublingual glands*.

The parotid glands, which are so constant in the Mammalia, escaped the notice of Cuvier and R. Owen; the latter even formally denies their existence. I have found the parotids well developed in the Echidna; but instead of being situated in front of the auditory passage, they are situated far back, at the middle of the neck.

In the Echidna there are on each side two submaxillary glands—one deep-seated, the other superficial. The deep-seated submaxillary gland has been well described by Cuvier and Owen. Its excretory duct passes directly forward, and pierces the great transverse muscle which forms the superficial layer of the floor of the mouth.

It is at this point that it receives the excretory duct of the superficial submaxillary gland.

The superficial submaxillary gland is a glandular mass of a rose-colour, and of an oval form, a little larger than the parotid, situated immediately beneath the skin, and applied against the pectoral muscle. The excretory duct which it emits is 9 centims. long; it runs forward, crossing the sterno-mastoidian, and opens into the excretory duct of the deep-seated submaxillary at the point already indicated. The superficial submaxillary gland is the first that makes its appearance when an Echidna is deprived of its skin; it has, however, hitherto escaped the notice of anatomists.

The common excretory duct of the deep-seated and superficial submaxillary glands presents a most remarkable arrangement, which escaped the notice of Cuvier and Duvernoy. This arrangement has been partially described by Owen, who regards it as unique in the class Mammalia.

The excretory duct, after having slightly dilated, passes forward, describing certain flexuosities and diminishing pretty rapidly in size. After having skirted the inner margin of the inferior maxillary, it reaches the symphysis of the chin. From its inner side lateral branches are given off, which, in their turn, divide several times, and open upon the floor of the mouth by very numerous orifices arranged in a single longitudinal row stretching from the base of the tongue to the symphysis of the chin.

I have had the good fortune to be able to examine the fleshy parts of the head of the New-Guinea Echidna (*Acanthoglossus Bruijuii*), a species still so rare that the Museum of Paris alone possesses the few individuals at present known. In this we find the arrangement of the terminal part of the excretory duct of the submaxillary glands vary a little. This duct swells into a fusiform reservoir, with very glandular walls, especially behind, extended from the base of the tongue to the symphysis. From the inner surface of this reservoir issue four or five secondary ducts, which open directly upon the floor of the mouth.

With regard to the sublingual glands, I have nothing to add to the observations of Cuvier, who described them for the first time. They seem to have escaped the notice of Prof. Owen.—*Comptes Rendus*, November 24, 1879, p. 910.

American Jurassic Mammals.

Prof. Marsh has recently described some additional remains of Mammals from the Jurassic strata of the Rocky Mountains. One of the most interesting is the *Ctenacodon serratus*, which agrees in its main features with the genus *Plagiaulax* of Falconer. The others are *Dryolestes arcuatus*, *Tinodon robustus*, and *T. lepidus*. These forms, as well as those already described, show a great resemblance to known types from the Purbeck beds of England.